1. Determine whether the function below is 1-1.

$$f(x) = (5x - 20)^3$$

A. No, because the domain of the function is not $(-\infty, \infty)$.

B. No, because the range of the function is not $(-\infty, \infty)$.

C. Yes, the function is 1-1.

D. No, because there is an x-value that goes to 2 different y-values.

E. No, because there is a y-value that goes to 2 different x-values.

---

2. Find the inverse of the function below. Then, evaluate the inverse at $x = 8$ and choose the interval that $f^-1(8)$ belongs to.

$$f(x) = e^{x-4} - 4$$

A. $f^{-1}(8) \in [-1.52, -0.52]$

B. $f^{-1}(8) \in [6.48, 8.48]$

C. $f^{-1}(8) \in [-4.61, -1.61]$

D. $f^{-1}(8) \in [-1.52, -0.52]$

E. $f^{-1}(8) \in [-4.61, -1.61]$

---

3. Subtract the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = 7x^2 + 7x + 9 \text{ and } g(x) = 2x + 8$$

A. The domain is all Real numbers except $x = a$, where $a \in [-9.17, -0.17]$

B. The domain is all Real numbers less than or equal to $x = a$, where $a \in [0.4, 7.4]$

C. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-0.33, 9.67]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-4.6, 7.4]$ and $b \in [-4.75, 0.25]$

E. The domain is all Real numbers.

---

4. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 11$ and choose the interval that $f^-1(11)$ belongs to.

$$f(x) = \sqrt[3]{3x - 2}$$

A. $f^{-1}(11) \in [-443.95, -442.28]$

B. $f^{-1}(11) \in [441.04, 444.2]$

C. $f^{-1}(11) \in [444.01, 444.69]$

D. $f^{-1}(11) \in [-445.64, -444.03]$

E. The function is not invertible for all Real numbers.

---

5. Find the inverse of the function below. Then, evaluate the inverse at $x = 10$ and choose the interval that $f^-1(10)$ belongs to.

$$f(x) = \ln(x - 5) + 3$$

A. $f^{-1}(10) \in [3269019.37, 3269022.37]$

B. $f^{-1}(10) \in [1084.63, 1094.63]$

C. $f^{-1}(10) \in [442415.39, 442424.39]$

D. $f^{-1}(10) \in [147.41, 155.41]$

E. $f^{-1}(10) \in [1098.63, 1103.63]$

---

6. Determine whether the function below is 1-1.

$$f(x) = (4x - 29)^3$$

A. Yes, the function is 1-1.

B. No, because there is a y-value that goes to 2 different x-values.

C. No, because the range of the function is not $(-\infty, \infty)$.

D. No, because the domain of the function is not $(-\infty, \infty)$.

E. No, because there is an x-value that goes to 2 different y-values.

---

7. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = -10$ and choose the interval that $f^-1(-10)$ belongs to.

$$f(x) = 3x^2 - 4$$

A. $f^{-1}(-10) \in [4.25, 4.48]$

B. $f^{-1}(-10) \in [2.74, 3.91]$

C. $f^{-1}(-10) \in [2.01, 2.17]$

D. $f^{-1}(-10) \in [0.95, 2.12]$

E. The function is not invertible for all Real numbers.

---

8. Multiply the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = 8x + 9 \text{ and } g(x) = 2x + 9$$

A. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [3.25, 11.25]$

B. The domain is all Real numbers except $x = a$, where $a \in [-8.33, -3.33]$

C. The domain is all Real numbers less than or equal to $x = a$, where $a \in [1.83, 3.83]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-6.6, -0.6]$ and $b \in [4.2, 13.2]$

E. The domain is all Real numbers.

---

9. Choose the interval below that f composed with g at $x = 1$ is in.

$$f(x) = 2x^3 - 1x^2 + 2x - 3 \text{ and } g(x) = x^3 + x^2 + 3x - 4$$

A. $(f \circ g)(1) \in [-0.8, 2]$

B. $(f \circ g)(1) \in [-7.6, -5.6]$

C. $(f \circ g)(1) \in [-4.3, -3.3]$

D. $(f \circ g)(1) \in [-11.7, -9.2]$

E. It is not possible to compose the two functions.

---

10. Choose the interval below that f composed with g at $x = 1$ is in.

$$f(x) = 2x^3 + 2x^2 - 2x \text{ and } g(x) = -2x^3 - 1x^2 + x + 1$$

A. $(f \circ g)(1) \in [-28, -25]$

B. $(f \circ g)(1) \in [2, 8]$

C. $(f \circ g)(1) \in [-10, 1]$

D. $(f \circ g)(1) \in [-19, -16]$

E. It is not possible to compose the two functions.
